Brother, Can Yo

Corbis Bettmann

A Hydro-History of the Bay-Delta

By Robert H. Boyle

When John Muir crossed the valley of the San Joaquin River in the spring of 1868, he likened it to the Garden of Eden. "Never were mortal eyes more thronged with beauty," he wrote. "When I walked, more than a hundred flowers touched my feet at every step closing above them, as if wading in water. Go where I would, east or west, north or south, I still splashed and rippled in flower gems."

Muir was on his way to the Sierra Nevada, his destination a near-mythical valley called Yosemite, high up in the watershed of the San Joaquin. This visit would change the course of Muir's life and, ultimately, the nation's approach to its natural heritage. And so, as Gene Rose observes in *San Joaquin: A River Betrayed*, "Today, it seems somewhat ironic that the San Joaquin River and its larger watershed—a water basin that nourished much of the American conservation movement, as well as the concept of a National Park Service—now stands as one of the most exploited rivers in the nation." Nothing better symbolizes the destruction of California's environment in the century since Muir found Yosemite than the devastation of the San Joaquin River, the Sacramento River, and the San Francisco Bay-Delta into which they both empty.

The San Joaquin and Sacramento drain the 450-mile-long, 50-mile-wide Central Valley, the narrow lowland heart of this mountainous state. The southern portion of the valley, home of the San Joaquin, is where Muir walked in 1868. Before the gold rush it was lush with marshes, birds, and game, including tule elk and grizzly bears, the latter the symbol of the state. The

Robert H. Boyle has been covering watersheds, fisheries, and other natural-resource issues since 1959.

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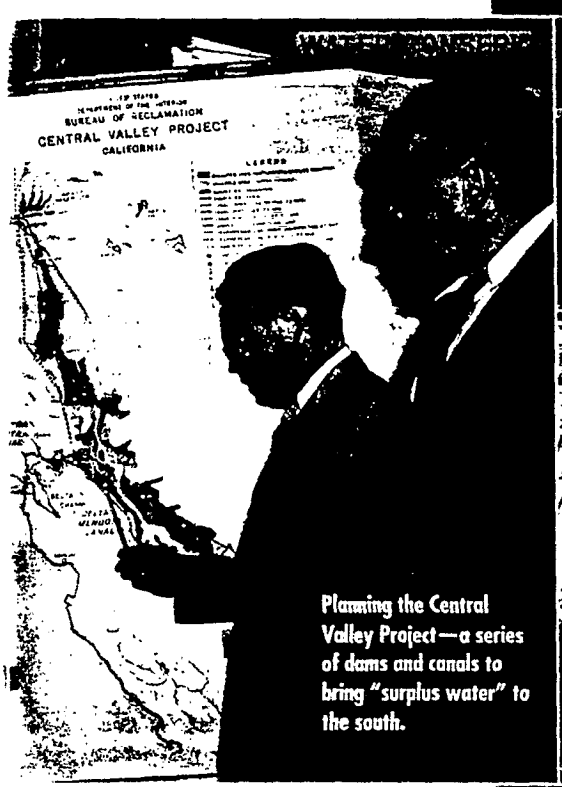
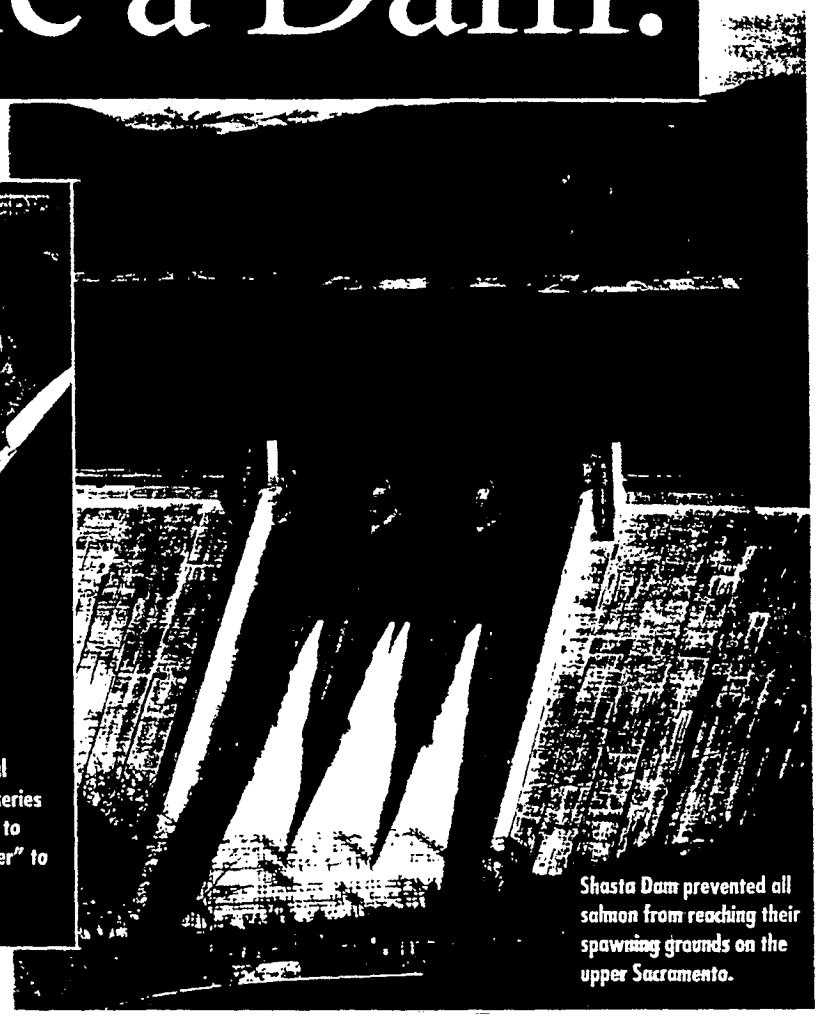


Planning the Central Valley Project—a series of dams and canals to bring "surplus water" to the south.



Shasta Dam prevented all salmon from reaching their spawning grounds on the upper Sacramento.

Photos this page: UPI-Corbis Bettmann

northern portion of the Central Valley belongs to the Sacramento River, which begins on Mount Shasta, a snow-capped, 14,162-foot quiescent volcano. As the Sacramento flows toward the delta, it receives almost all its water from tributaries in the Sierra Nevada—Spanish for "mountains of snow"—to the east. A faulted wall of granite 8,000 to 14,000 feet high, the mountains intercept the November-to-May snowstorms coming from the Pacific Ocean. Were it not for the Sierra Nevada there would be no snowmelt in the spring, and the Central Valley would be all desert.

When this system functioned naturally, the San Joaquin was the southernmost salmon river in the world, while the Sacramento ranked among the greatest chinook salmon rivers in the world, second only to the Columbia. The delta they shared was a maze of fertile estuarine marshlands that gave onto the waters of San Francisco Bay. Estuaries are among the most productive ecosystems on the planet, because the inflows of salt water from the ocean and freshwater from the land combine with tidal action to trap nutrients, fostering a rich and diverse biota. The San Francisco Bay-Delta system is the largest estuary on the western coast of the Americas, and in days of old it was celebrated for its Edenic abundance of Dungeness crabs, shrimp, oysters, and salmon.

But the ability of an estuary to function naturally depends upon the free flow of freshwater into it. Inside the delta that vital flow has been choked and rechanneled. The original marshlands have been drained, leveed, and turned into agricultural islands. These islands are slowly sinking—some are already 20 feet below sea level—and their crumbling levees are in constant need of repair. All told, the islands make up 550,000 acres of farmland, crisscrossed by 700 miles of channels and sloughs.

And the flow of freshwater from the San Joaquin and Sacramento, lifelines of the Bay-Delta, has been all but cut off. When more than 25 percent of the freshwater flow into an estuary is regularly diverted, its productiv-

ity is severely impaired. In the case of the Bay-Delta system, more than 60 percent of the freshwater has been diverted elsewhere, mainly for the benefit of agribusiness. Over the decades, the California that Muir knew has become a plumbing labyrinth in which tides go backward and water flows uphill, and the Bay-Delta system has become both tub and toilet for the biggest irrigation works in the world.

Consider the San Joaquin. For the past fifty years the river has been mostly bone dry for 50 miles, a dusty gulch mined for gravel and pimpled with illegal garbage dumps. This is the work of the Friant Dam in Fresno County, which stops the water from flowing north and shunts it south for agribusiness. The salmon are gone, and so are most of the wetlands and wildlife. The grizzly, of course, vanished long ago.

Agribusiness accounts for only 5 percent of the annual gross state product, yet it consumes more than 80 percent of the surface water used in California. A third of the water is used to irrigate highly water-consumptive and subsidized crops, such as cotton and alfalfa, in desert or near-desert lands. Marc Reisner, author of *Cadillac Desert*, has calculated that it takes 48,000 pounds of water to grow one pound of cow in the San Joaquin Valley. And as Lloyd Carter, president of the California Save Our Streams Council, says, "Taxpayers have subsidized every stage of the scam." The dams that collect the water were bought and paid for by the state and federal government; and agriculturalists still pay about $50 per acre-foot (the volume required to cover one acre to a depth of one foot) for water that can fetch as much as $250 per acre-foot on the free market.

Silt and rock dislodged by hydraulic mining raised the bed of the Sacramento River by as much as 30 feet.

Colby Bermann

Dramatic alteration of the California landscape began in 1849 after the discovery of gold on the American River, a tributary of the Sacramento. Invading forty-niners panned for gold in rivers or ran water through rockers and sluices to wash the "diggin's." But in the 1850s, following the development of hydraulic mining, miners diverted streams into storage reservoirs. From there they sent water roaring down flumes, where it was funneled under high pressure into hoses that enabled the miners to wash down mountainsides to bedrock. As mountainside gave way to the bombardment of water, a popular ditty of the day, sung to the tune of "O Susanna," went: "I'll scrape the mountains clean, my boys, I'll drain the rivers dry, a pocketful of rocks bring home. So, brothers, don't you cry."

Every year hydraulic mining sent tens of millions of tons of earth and rock debris avalanching downhill, smothering the spawning beds of fish, impeding navigation, and blanketing farmland. Two hundred to 250 feet of mine spoil obliterated the Greenhorn and the Steep Hollow rivers, raised the bed of the Sacramento River by as much as 30 feet, and sent silt out to the Golden Gate. Finally, in 1884, a state court prohibited hydraulic miners from discharging their spoil into navigable waters. Even today, old spoil still moves downriver. Indeed, sedimentation, along with the filling and diking of marshlands, has decreased the size of San Francisco Bay by more than a third.

Further assaults on the state's rivers came with railroad construction, extensive logging, and overfishing, particularly in the case of salmon and steelhead. Then, in 1887, the state allowed the formation of irrigation districts: the Age of Dams had arrived. Throughout the Central Valley, where lack of summer rain had always restricted the growth of agriculture, small dams sprang up on stream after stream. By 1928 only 20 percent of the original Sacramento-San Joaquin salmon spawning grounds remained unobstructed.

But those first dams were insignificant compared with what was to come. In the 1930s the process of redesigning California water flows began in earnest. In 1933 the state legislature approved the Central Valley Project for the export of "surplus water" from the north, where almost all the precipitation falls, to the more populous south, which is mostly arid. The project called for the construction of a series of dams and canals, starting with the Shasta Dam on the upper Sacramento River and the Friant Dam on the San Joaquin. But with the Depression under way, the state found itself unable to sell the bonds needed to construct the project and turned to the federal government for help. And in 1935 the U.S. Bureau of Reclamation took charge.

Created in 1902 during Theodore Roosevelt's administration, the bureau was charged with bringing water to "arid and semi-arid lands in the western United States." The law specifically charged the bureau with

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supplying its taxpayer-subsidized irrigation water only to individual farmers holding no more than 160 acres of land (or 320 acres in the case of husband and wife). The bureau, however, was to violate this proscription time after time—supplying subsidized irrigation water to enormous corporate farms owned by the likes of Standard Oil, Richfield Oil, the Kern County Land Company, and the Southern Pacific Railroad. And in the decades since its entry into California, the bureau has done its best to make flesh—or, rather, concrete—the words of California governor Earl Warren in 1945: "In my opinion, we should not relax until California has adopted and put into operation a statewide program that will put every drop of water to work."

Completed in 1944, the Shasta Dam prevented all salmon and steelhead from reaching their spawning grounds on the upper Sacramento, and hatcheries had to be built. That same year, virtual completion of the Friant Dam on the San Joaquin began the destruction of the southernmost salmon run on the North American continent, as 98 percent of the river's flow went to agribusiness. Nor was the Central Valley Project the only major plumbing operation visited on the Sacramento and the San Joaquin. There was also the State Water Project, which went into effect in 1957. Originally, the Central Valley Project had been designed in part as an irrigation system for crops growing on the east side of the valley; the dams, pumps, and canals of the state project were designed to supply water for the west side. In addition, thanks to the construction of the California Aqueduct—at that time the longest canal in the United States and perhaps the world—it was also a lifeline to the delta's water for urban interests in southern California.

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California attorney general Pat Brown ruled in 1951 that the U.S. Government could drain the San Joaquin without "state interference."

The proliferation of dams was aggravated by environmentally disastrous management of the water behind them. In October of 1947, for instance, the Bureau of Reclamation deliberately diverted water from the San Joaquin after salmon had entered the river to spawn, [illegible] Friant Dam. According to George Warner, a member of the California Department of Fish and Game crew that attempted to collect and truck salmon to safety, the water was for no more urgent a purpose than "to produce surplus potatoes and cotton in the lower San Joaquin Valley." Neighboring farmers, the city of Fresno, fishermen, duck hunters, and a thousand downstream landholders sued the federal government to stop the diversion. But in 1951, California attorney general Edmund G. ("Pat") Brown issued a ruling that on this matter, the federal government was exempt from "state interference."

Later, as governor, Pat Brown blocked an attempt by the state's Department of Fish and Game to appeal a decision granting legal title to the water stored behind Friant Dam to the Bureau of Reclamation. This decision rendered the bureau's standard practice of disregard for the river and its wildlife untouchable for decades to come. In the late 1940s the bureau had begun negotiating water contracts with agricultural interests; the contracts had a life span of forty years, and they were planned and signed with no evaluation whatsoever of the environmental effects of draining the river. (It was not until June 1998, after ten years of legal battle by NRDC and several other conservation and fishing groups, that the bureau was at last directed to obey the basic California and U.S. laws for protection of fish and the environment when it doles out water from Friant.)

The delta was also hit hard by diversions of its freshwater. In 1951 the Bureau of Reclamation began pumping at Tracy and sending freshwater south through the Delta-Mendota Canal. In 1967 the state began pumping from the delta at the nearby Clifton Court Forebay, sending still more water south through a parallel canal, the California Aqueduct. The combined suction of the two pumping stations proved strong enough to reverse flows in the delta and turn the ebb tide into a flood tide. This confused fish attempting to move upstream to spawn and annually killed or sucked in countless zooplankton, fish eggs, and an estimated 200 million young fish.

In the 1960s the Bureau of Reclamation spent $1.4 billion to bring more freshwater from the delta to irrigate the arid west side of the San Joaquin Valley—even though twenty years earlier, U.S. Department of Agriculture scientists had warned that the westside soils contained high levels of selenium. Selenium is a bizarre element: in minute amounts it is an essential trace element for growth, but in higher concentrations in water it can be a hundred times more poisonous than arsenic. Mobilized by irrigation, selenium can reach waterways and marshes and be taken up by plants and invertebrates, and as little as [illegible] parts per billion in those plants and invertebrates can poison animals that eat

them. Indeed, in 1985 a public outcry forced the Interior Department to close the Kesterson National Wildlife Refuge—the repository of selenium-contaminated irrigation water that was carried from the westside fields via a drainage canal—after U.S. Fish and Wildlife Service biologists discovered a high incidence of deaths and deformities in wildlife there, and livestock on nearby ranches sickened and died.

All this hydraulic havoc has wreaked grave ecological damage in the rivers and the Bay-Delta. The quantity of water left over for fish and wildlife has been dramatically reduced, and its quality severely compromised by the by-products of agriculture, pesticides as well as selenium. In 1995 Fresno County, whose gross annual farm income of $3 billion makes it the richest agricultural county in the nation, led the state in pesticide application: the total was more than 10.5 million pounds. In the same year, four other San Joaquin Valley counties applied an additional 43 million pounds of pesticides. And, according to Dr. Joseph Skorupa of the U.S. Fish and Wildlife Service, every day since the late 1960s, irrigated fields in the western and southern San Joaquin Valley have been discharging selenium-contaminated drainage water that is equivalent in volume to the *Exxon Valdez* disgorging itself eight times over.

The results, argues William Davoren, founder and former executive director of the Bay Institute of San Francisco, have been so damaging that the practice of fish and wildlife biology in California has become "the study of systemic death." In 1992 a joint report by researchers at the University of California at Davis and the Fish and Wildlife Service found that throughout the state, 65 percent of fish species native to California were extinct, endangered, or at risk of

HOPE SPRINGS ETERNAL

Even on the Bay-Delta

by GLEN MARTIN

I drive a lot. That's what you do in California, to get anywhere; there is no mass transit worthy of the name. And the driving, frankly, is depressing. We are now at the height of a building boom, and the lovely hills, carpeted with lupines and poppies in the late winter and spring, tawny in summer and fall, are increasingly obscured by pink stucco luxury homes. And the valleys that lie between them? Forget the valleys. They were built out long ago.

What we are experiencing now is only the latest in a series of booms and busts stretching back to the gold rush. The vast estuary that is San Francisco Bay and the delta of the Sacramento and San Joaquin rivers took most of its body blows decades ago. The millions of salmon, the tens of millions of waterfowl: gone now, with the grizzlies and tule elk and Ohlone Indians, and the memories of them are fading like old daguerreotypes.

And yet, when I drive around this abused and beleaguered estuary, I can also find hope. Hope is springing miraculously along the edges of the Bay-Delta, and emerging with it are renascent marshes and the myriad creatures that depend on them. The numbers are startling. Over the past several years, about 8,000 acres of wetlands have been restored or enhanced in the greater bay and delta, and projects totaling several thousand additional acres are pending. These new wetlands are found throughout the Bay-Delta system. At the 23,000-acre Don Edwards San Francisco Bay National Wildlife Refuge in the South Bay, long-term projects focus on converting commercial salt ponds to tidal marsh. A recent decision by a Japanese corporation to forgo development plans has led to a hugely ambitious restoration plan for Bair Island, a 1,600-acre tract near Redwood City. Many such projects are bolstered in whole or in part from dollars provided because of CALFED, the alliance of state and federal agencies convened in 1994 to improve Bay-Delta water quality and streamline water deliveries throughout the state.

No one familiar with the issues denies that the restorations are momentous. "We have a long way to go, and the threats and pressures remain real—we've lost more than 85 percent of the estuary's wetlands, and more are threatened," says Grant Davis, executive director of the Bay Institute. "But we also have a historic opportunity here, and I hope more people get involved in the CALFED process so we can take full advantage of it."

At the same time, of course, no one familiar with the issues denies that however heartening the restorations, the real issue behind CALFED is water. Only if more freshwater is released to flow down the delta and out the Golden

Glen Martin is a reporter for the San Francisco Chronicle.

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becoming endangered. As for plants and wildlife as a whole, California has more species listed by the federal government as threatened and endangered than does any other state in the lower forty-eight. The wreck of the Bay-Delta has had a role in this decline.

Yet all the damage to the rivers and the Bay-Delta system was done in ignorance. No one had any idea that the system was as much of a natural wonder as Yosemite or the redwoods, and no one bothered to study it to obtain data that could aid in making informed decisions. Marine biologist Joel Hedgpeth believes the word "estuary" was not even applied to the Bay-Delta until 1969, when he used it in a congressional hearing. And when Governor Warren held a conference on the proposed State Water Project in 1945, neither the state Department of Fish and Game nor the U.S. Fish and Wildlife Service submitted any comments for the record. In fact—marvelous California touch—the only person to speak for the salmon was the chairman of the Fellowship for Social Justice of the First Unitarian Church in Sacramento.

The rivers and the Bay-Delta were victims of the prevailing ecological ignorance of the past century, which allowed people to think of nature as limitless and infinitely able to heal itself; and of the prevailing values, which held that natural resources existed to be exploited and "improved upon." As the water was drained away, and with it the tule elk, the salmon runs, and the flowers that Muir walked through in the San Joaquin Valley, most Californians congratulated themselves on the march of progress and the growth of riches in their state. Joel Hedgpeth remembers that, as a graduate student at Berkeley in the 1940s, he expressed the view that some people wanted water left in the rivers for salmon. An agriculture professor shouted indignantly: "What are they going to do with that water, *waste it?*" •

Gate will the ecosystem of the past return—and with it the salmon, the delta smelt, the entire ineffably rich web of life that once made this the most fertile estuary on the West Coast. As Zeke Grader, executive director of the Pacific Coast Federation of Fishermen's Associations, has said: "We don't want to take credit away from CALFED for all the ecosystem-restoration planning they have accomplished. We wish them well. But from a fisheries standpoint, it doesn't mean a thing if the water is foul and there's not enough of it."

Nevertheless, the hope is real. It has made me weep on more than one occasion, when I've watched rafts of waterfowl lighting where cattle once grazed on sere pasture. And against my better instincts, hope has raised my expectations.

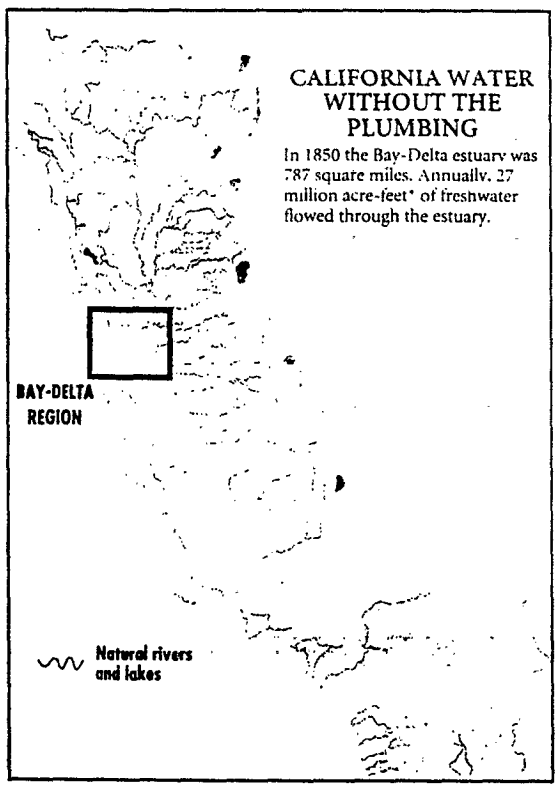
Wetlands at the Don Edwards San Francisco Bay National Wildlife Refuge.

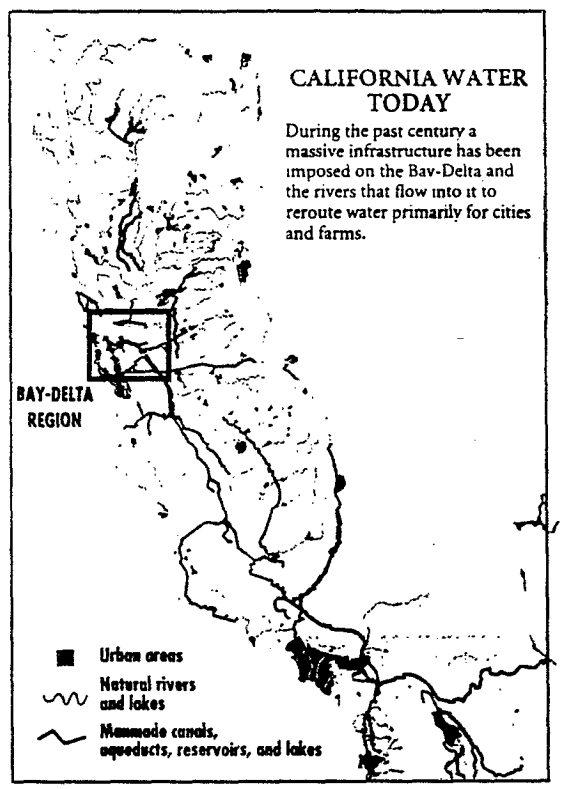
My personal favorite among the restored wetlands is the Cullinan Ranch near Vallejo. Until 1991 it was a 1,500-acre pasture, one of the many low-lying fields carved out of the rich marshlands of the delta with dikes and levees. When the National Park Service acquired the land in 1991, it turned off the pumps that had been constantly running to keep the acreage dry—and the marsh has surged back. Before, Cullinan Ranch was a drab expanse of cropland. Now it is a sea of tules, cattails, and sedges, laced with channels, sloughs, and ponds; waterfowl and shorebirds have been drawn to it like air to a vacuum. And soon the park service will begin breaching the levees, turning the tract back into the tidal marsh it once was.

You can hike the ranch, because it is now part of the 13,000-acre San Pablo Bay National Wildlife Refuge. An extended walk is well worth the effort. In the winter great rafts of canvasbacks and bluebills ride the choppy water of the ponds. By May ducklings and goslings are abundant in the backwaters. The number of raptors has also increased extravagantly; a month ago I saw a peregrine perching stolidly on a telephone pole, surveying the variegated landscape for prey. And mammals: otter, beaver, muskrat, black-tailed deer. They are all year-round residents here. No grizzlies, of course, but it's possible tule elk could be re-introduced.

The old ghosts are coming into sharper focus. I stand in the middle of the refuge, I look bayward; except for the hum of the highway, I can suspend my disbelief. I can almost discern a wisp of smoke from a distant Ohlone village. •

The Plundered Paradise

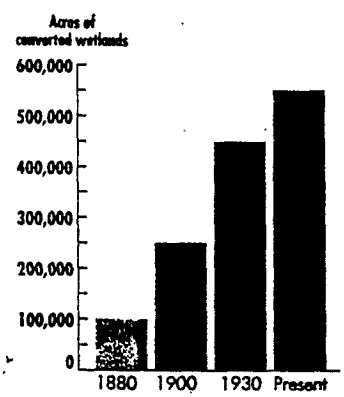




One acre-foot is enough water to cover one acre of land one foot deep, approximately 326,000 gallons.

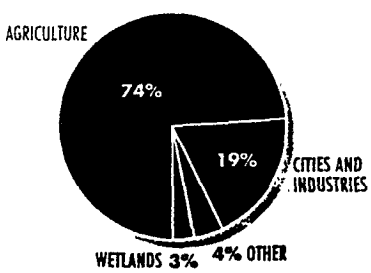
CONVERTED WETLANDS

In the mid-1800s farmers began to build levees in the Delta to prevent flooding and to drain wetlands so the land could be converted (or reclaimed) to farmland. Today 1,000 miles of levees surround half a million acres of farmland.



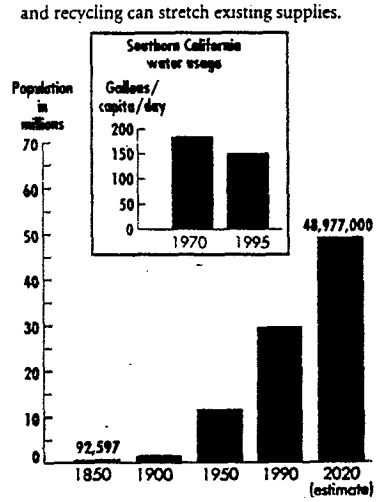
WHERE THE WATER GOES

In average years, 50 percent of the water destined for the Bay-Delta is diverted from its natural course; in dry years, up to 70 percent. Water from the Bay-Delta system irrigates 7 million of the state's 29 million acres of farmland. More than half of the water used in California agriculture goes to grow water-intensive crops, such as rice, cotton, alfalfa, and irrigated pasture.



POPULATION PRESSURES

While agriculture places onerous burdens on water resources, increasing population is another strain. But Southern Californians have demonstrated that water conservation and recycling can stretch existing supplies.



Graphics by Joyce Pendola

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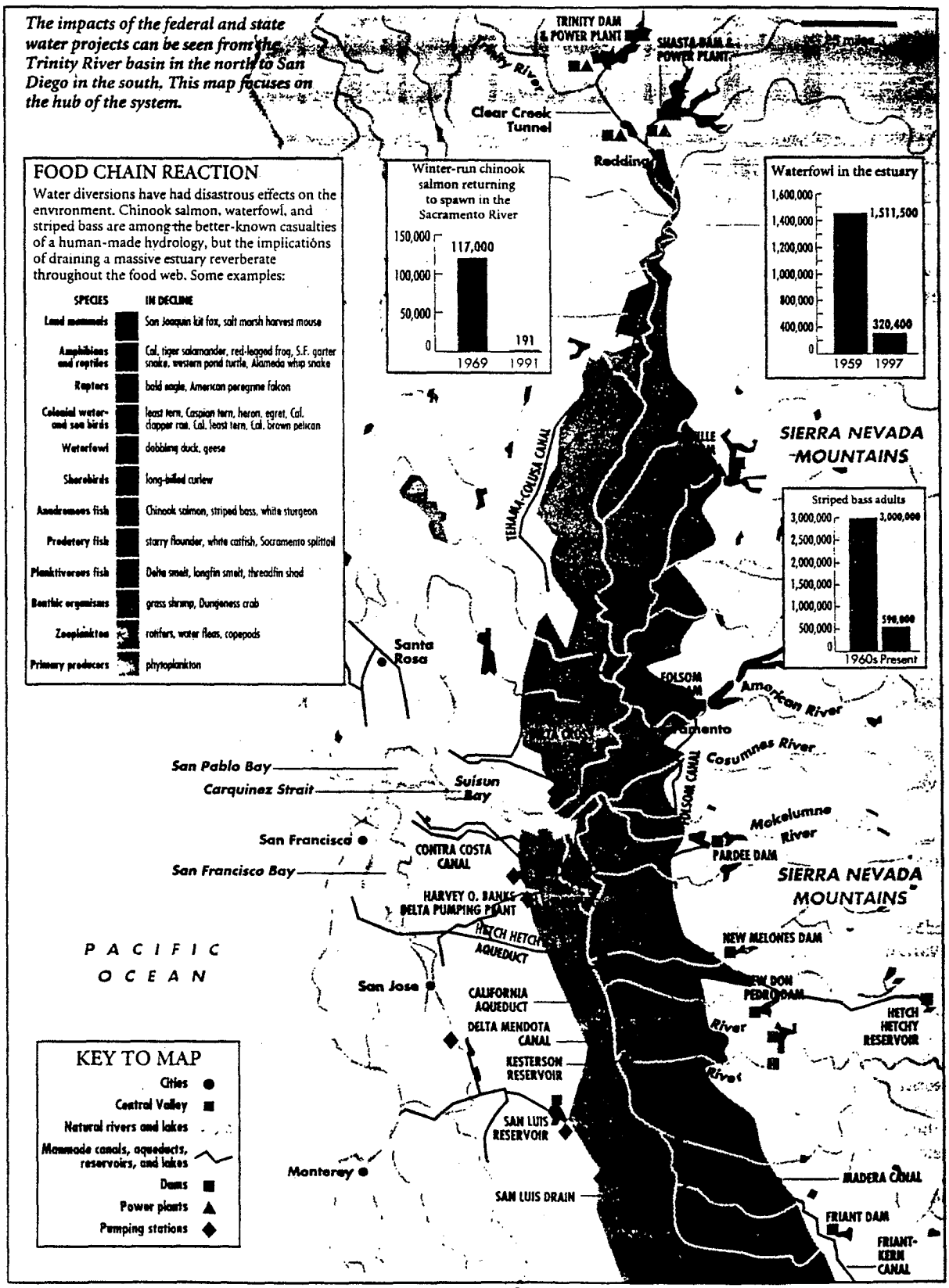

TURNING THE TIDE?

In the past few years, several changes have come about for the Bay-Delta—and for once, they're for the better. Stronger standards are in place to improve the water quality of the estuary. More fish species and their habitats are being protected under the Endangered Species Act. In 1992, Congress passed the Central Valley Project Improvement Act (CVPIA), requiring, among other things, more freshwater for the Bay-Delta and the river fisheries.

But the change most talked about today is CALFED: a program of California and federal government agencies charged with solving the environmental problems of the Bay-Delta and ensuring that the water supply for agricultural and urban users becomes more reliable. Most state and national environmental groups in California are supporting the CALFED effort and trying to move it in the right direction—even as they wonder just how much CALFED can loosen agriculture's grip on the state's water politics.

Is the glass half full? Or still mostly empty? *Amicus* has invited some representatives of the environmental and fishing groups working for change to share their different perspectives on the Bay-Delta's future.

Martha Davis
Board of Directors
Mono Lake Committee

Southern California uses about 700,000 acre-feet of water from the Bay-Delta annually. CALFED's draft environmental document assumes that this demand will rise dramatically—by up to 2 million acre-feet—by the year 2020. This increase would mean potentially devastating ecological problems for the Bay-Delta.

As a Southern Californian, I know that there is a better way to meet the region's future water needs. Since 1990 our community has worked to promote water conservation, water reuse, and careful tapping of local groundwater. We've been incredibly successful. Southern California has installed more than a million ultra-low-flow toilets, constructed the nation's largest water-reuse project, built up local water supplies, and increased our capacity to cope with future droughts.

We've proven that Southern California can drastically cut its dependence on Bay-Delta exports. Los Angeles today is using the same amount of water as it did in the mid-1990s—even though Mono Lake water is now protected and the city's population has grown by almost 1 million. Overall, Southern California has actually reduced its water demand by about 800,000 acre-feet since 1990.

Will CALFED build on this success? To date, CALFED's assumption that Southern California needs "more" water has not changed. Tragically, Californians may be asked to pay billions of dollars for unnecessary dams and canals—instead of developing a more equitable, cost-effective solution for the whole state based on Southern California's experience.

Zeke Grader
Executive Director
Pacific Coast Federation of Fishermen's Associations

The Central Valley Project Improvement Act, a well-crafted law, has been thwarted by federal agencies that have pursued restoration of fish and the environment with all the competence and vigor of McClellan's Army of the Potomac. And don't expect much from CALFED. The policies so far look more problematic than promising.

The big problem with CALFED's planning is that it retains the concept that engineering fixes, not additional flows of water, can restore the Bay-Delta. The draft environmental document, now under review, provides for additional diversions of freshwater from the system. It sorely lacks both a water-supply plan for future population growth and an aggressive plan for water conservation and reuse. Beneath all the rhetoric, there is still the same tired old thinking.

The best hope, it seems, lies elsewhere: the Endangered Species Act, which will protect habitat for salmon;

the new water-quality standards for the delta; and gains made in court, such as the recent decision won by NRDC and a host of environmental and fishery co-plaintiffs that will change the way water is distributed from the Friant Dam on the San Joaquin River. If the Bay-Delta is to be restored and protected, it will happen because of that triad of laws we have come to rely on time and again: the Clean Water Act, the Endangered Species Act, and the Magnuson-Stevens Fishery Conservation and Management Act.

Barry Nelson
Senior Fellow
Save San Francisco Bay Association

For decades, environmentalists and fishermen have called for an ecosystem-wide restoration program for the Bay-Delta. To its credit, CALFED is attempting just this. The process has not yet met our expectations. But environmentalists and fishermen must bring all our weight to bear—and remind CALFED what is really at stake.

If CALFED mandates the most extensive ecosystem restoration ever undertaken, in a few decades the Bay-Delta will become a thriving urban ecosystem, filled with abundant seafood and surrounded by hundreds of thousands of acres of restored wetlands. Every year a million salmon will swim upstream. These wild fish will support a sustainable ocean fishery and local economies from central California to the Oregon border. Shrimp fishermen will once again fish the estuary itself. From fall through spring the skies will be filled with migratory shorebirds and waterfowl. Through fishing, tourism, navigation, education, and recreation, the estuary will improve the Bay Area's quality of life and strengthen its economy. In the Central Valley, thriving farms will support wildlife and healthy communities.

San Francisco Bay will never again be the pristine wilderness it once was. But California's quality of life and economic health will be sounder if built on a healthy Bay-Delta environment. People used to say that when the salmon were running, one could walk across rivers in California on the backs of the fish. Someday, if CALFED steps up to the plate, we may all be able to give it a try.

Ann Notthoff
Senior Policy Analyst
NRDC

In an attempt to recognize the ecological and political complexity of the Bay-Delta issue, CALFED provides many seats at the table, giving many different parties the chance to present their views to the decision makers. Not everybody in this diverse group is going to be happy with putting ecosystem restoration first. Yet that's precisely what CALFED must do. It must preserve the environmental protections that already exist, and more: it must find a solution that lives up to the Clean Water Act, the Endangered Species Act, and the CVPIA. It's time for the environment to take priority.

NRDC is participating in the CALFED effort because we think it offers the best chance in years to tailor a thoughtful, long-term solution. If California uses water wisely, it will have enough to meet human and environmental needs. But CALFED must find a better solution, not just more of the same. Recently, water-development interests—as well as Governor Pete Wilson—have been advocating more plumbing. We've even heard how "environmental dams" will help the ecosystem. But more concrete and more canals are not the answer for a river system already suffering from too much engineering.

CALFED's draft environmental document, now under review, still has a long way to go. NRDC is doing all we can to push CALFED toward a solution that relies on better water management, recycling, conservation, and water transfers. It will take time to do it right, but it's time worth taking.

Felix Smith
Biologist
U.S. Fish and Wildlife Service (retired)

CALFED has the authority to take a new look at how water has been allocated and used for much of the twentieth century. It has the opportunity to restore nearly dry and poor-quality streams to productive ecosystems that meet the new delta water-quality standards; to implement efforts to conserve water quality in all areas of use; to look at toxic agricultural drainage, especially that from soils imbued with selenium. (Such irrigation might be found an unwise use of water.)

In 1983 a lawsuit brought by the National Audubon Society reaffirmed and expanded the "public trust" doctrine. One finding was that "the public trust ... is an affirmation of the duty of the state to protect the people's common heritage of streams, lakes, marshlands, and tidelands." And the guiding principle of the Fish and Game Code requires that aquatic ecosystems, water quality, and aquatic wildlife be maintained "in good condition."

Will CALFED meet these requirements? So far, its proposals look like more water-development activities. There is little in the way of a plan for holistic ecosystem restoration and protection. Until all the dam owners come up with flow regimens that ensure good conditions throughout their channels and in the delta, and until success is measured in restored aquatic ecosystems—not in acreage to be irrigated—meaningful environmental restoration will take a backseat to water exports. In the end, lawsuits brought under the public-trust doctrine may be the best way to protect our public-trust assets. •